Materials and Qualification Procedures for Ships

Book P

Procedure 19-7

Procedure for Recognition of Corrosion Control Coatings

Revision 1, December 2013
Procedure for recognition of corrosion control coatings

1 General Information

1.1 Scope of Recognition

1.1.1 Coatings that are used to protect steel from corrosion and deterioration in service are termed corrosion control coatings. These may be used throughout the internal spaces and exterior hulls of vessels, except where specialist, approved coating types are required by the Lloyd’s Register Rules and Regulations for the Classification for Ships.

1.1.2 Detailed instructions for the approval and recognition of coatings for specified applications are contained within Book P of the Material and Quality Procedures for Ships (MQPS) – Procedure 19-3 for PSPC-compliant water ballast tanks coatings, and Procedure 19-4 for PSPC-compliant cargo oil tank coatings.

1.1.3 Corrosion control coatings intended for use in areas where additional corrosion prevention technologies such as sacrificial anodes or impressed currents are utilised shall be tested before use to ensure their compatibility.

1.1.4 Coatings which have satisfied the requirements of this procedure shall be issued with a recognition certificate valid for five years, and the product will appear in Lloyd’s Register’s List of recognised corrosion control coatings, which is published on Lloyd’s Register’s ClassDirect Live web site.

1.1.5 Recognised corrosion control coatings which are specified for use on external hulls automatically meet the “high resistant paint” requirements of the Lloyd’s Register In Water Survey (IWS) notation, as defined in the Lloyd’s Register Rules and Regulations for the Classification for Ships, Part 3, Chapter 2, Section 3.5.

1.2 Related Documents

1.2.1 Lloyd’s Register’s Rules and Regulations for the Classification of Ships (hereinafter referred to as the LR Rules for Ships).

1.2.2 Lloyd’s Register’s Rules for the Manufacture, Testing and Certification of Materials (hereinafter referred to as the LR Rules for Materials).
2 Application for Recognition

2.1 This section sets out the five stages involved in the granting of Lloyd’s Register recognition.

1. Application for recognition Form-CCC to be completed and submitted to Lloyd’s Register
2. The documents referred to in Section 3 of this procedure are to be prepared and submitted for review
3. If required, audits of the manufacturing site(s) by Lloyd’s Register Surveyors are to be performed as described with section 4, and an audit report issued
4. A review of the submitted documents and any completed audit report(s) will be conducted by the Materials and NDE department (MNDE)
5. A certificate, valid for 5 years, will be issued by MNDE if all the submitted evidence is found to meet the requirements detailed in this procedure

3 Form-CCC

3.1 Form-CCC shall be completed, providing the required general information of the product, locations of manufacturing sites, indicating whether the product is being manufactured under licence, and forming a signed declaration that the formulation of the product will not be changed without informing Lloyd’s Register. The following documents shall be provided together with the completed form:

3.1.1 The product technical data sheet (PTDS) for the product shall be submitted for review. The technical content of PTDSs will be considered by MNDE and, if necessary, amendments requested in order to ensure these documents contain all the information required by end-users.

3.1.2 The product safety data sheets (PSDS) shall be submitted for each of the components of the coatings(s).

3.1.3 A test report meeting the requirements of section 6 below.

3.1.4 For corrosion control coatings which are new to the recognition scheme, service experience reports shall be provided indicating the corrosion prevention performance of the product, and its ability to tolerate the various environments encountered during service.

4 Form-M

4.1 Form-M shall be completed indicating which manufacturing sites are to be certified as manufacturing the coating, and a copy of each site’s quality control certificate (ISO 9001 or local equivalent) provided.
4.2 Where manufacturing site(s) do not have a certified quality system, an audit of each site may be required to be performed by Lloyd’s Register surveyors, depending on the experience of the site in producing coatings. Such audits are limited in their scope to examining the quality control functions necessary in order to produce a product of a consistent quality, and are not intended to replicate the full scope of an ISO 9001 audit.

4.3 The details given on Form-M should be identical to the details present on the labels of each of the coating components, and will be faithfully transcribed to the recognition certificate(s).

4.4 Applicants who are new to Lloyd’s Register’s coatings recognition schemes should provide a company profile and details of their experience in coating manufacturing, and the provision of services to the marine industry.

5 Pre-qualification Tests

5.1 All corrosion control coatings considered for initial recognition are to be submitted accompanied by a test report indicating their suitability for the applications they are intended for.

5.2 Coatings which are marketed as “summer” and “winter” versions shall be tested separately. Where a single formulation of product is marketed under different tradenames, the applicant shall prove the formulations to be identical by submitting infra-red spectra and specific gravity data from actual production batches.

5.3 The pre-qualification tests may be conducted at the manufacturer’s own laboratory under Lloyd’s Register survey, or at an independent test laboratory specialising in materials testing and accredited for the tests performed.

5.4 Standard and Non-standard Tests

5.4.1 Tests conducted in accordance with the following standards will generally be acceptable for recognition as a corrosion control coating, except where exposure to especially aggressive environments necessitate the use of non-standard tests:

- ISO 20340 – Paints and varnishes – Performance requirements for protective paint systems for offshore and related structures
- NORSOK Standard M-501 – Surface preparation and protective coating, tested as system 7B
- Marintek B1 tests conducted before 8th December 2006
- Annex 1 to IMO Resolution MSC.215(82) – Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces in bulk carriers (PSPC-WBT)
5.4.2 Other test regimes may be used subject to the scope of testing being reviewed and agreed by MNDE prior to the commencement of the tests. The tests performed should, as a minimum, include:

- Salt spray cabinet exposure
- Cycling humidity chamber exposure
- Bend testing
- Resistance to cathodic disbonding

5.4.3 Where compatibility between the candidate corrosion control coating and specific cargoes or service conditions (i.e. elevated or cryogenic temperatures, corrosive cargoes) test results shall be submitted confirming the coating’s suitability for such applications.

6 Test Report

6.1 The test report shall consist, as a minimum, of the following information:

- Details of the laboratory when the tests were conducted
- The corrosion control coating name, colour, and batch number
- Details of the substrate used (i.e. mild or stainless steel, including steel grade)
- Details of surface preparation including assessments of cleanliness and surface roughness
- Details of coating application, including spray equipment used, dry film thickness measurements and ambient conditions
- Details of any pre-fabrication primer present under the corrosion control coating
- Results of the physical testing of the test specimens
- Photographs of the tested specimens
- Confirmation that the formulation of the tested coating is identical to the current production formulation

6.2 Where the test report does not contain all of the information required above it shall be submitted for review together with any supporting information available. The applicant will be informed by MNDE of the nature and scope of any additional testing required for recognition.

7 In-service Experience

7.1 When new corrosion control coatings are submitted for consideration for recognition by Lloyd's Register, the application should be accompanied by service experience records.

7.2 Acceptable inspection reports shall be produced by Lloyd's Register surveyors, or by independent qualified coating inspectors. The report shall specify the service conditions encountered by the coating, the duration of
the exposure and the coating condition. Submissions indicating extreme service conditions such as those mentioned in section 5.4.3 above shall be supported by a statement from the vessel's owner confirming the service conditions.

7.3 Where possible, the original coating conditions shall be specified, including surface preparation, presence of primer, number of coats and dry film thicknesses of the corrosion control coating, and that no significant repair has been performed during service.

8 Review

8.1 A review of the required documents referenced in Sections 3 and 4 and the test report will be undertaken by MNDE. Queries arising from the review by MNDE will be referred back to the applicant for clarification. The suitability of the corrosion control coating for recognition by Lloyd’s Register will be determined by reference to the criteria given herein.

9 Validity of Recognition Certificate

9.1 Initial Recognition

9.1.1 When a corrosion control coating has been deemed to satisfy Lloyd’s Register’s requirements, a certificate will be issued. Each certificate is specific to both the coating system and the manufacturing site.

9.2 Certificate of Recognition

9.2.1 The certificate will contain the following information as a minimum:

- Name of Company, and address of the manufacturing site
- Name and type of the corrosion control coating
- Certificate number, date of issue and date of expiry
- The applications which the coating is suitable for
- The required surface preparation
- The manufacturer’s recommended dry film thickness
- Number of coats required
- Any exclusions, see 9.3 below

9.2.2 Certification will normally be valid for a five-year period from the date of issue. Significant changes to the manufacturing site quality system, equipment or relocation of existing activities may result in the withdrawal of the certificate.
9.2.3 Certification is contingent of the formulation of all the components of the coating remaining the identical to those tested during the certification process.

9.2.4 It is the responsibility of the manufacturer to inform Lloyd’s Register of any change in formulation of any component of their recognised products prior to the changes being made.

9.2.5 The system’s details will be entered into the Lloyd’s Register database of approved products, in the List of recognised corrosion control coatings, which is published on Lloyd’s Register’s ClassDirect Live web site. This entry will include the coating details, site of manufacture, expiry date and certificate number.

9.2.6 When a certificate is withdrawn or allowed to expire, the ClassDirect Live listing will be amended to reflect the termination date.

9.3 Exclusions

9.3.1 The recognition certificate will detail any exclusions, based upon the areas of application requested by the manufacturer and the tests performed/service experience submitted.

9.3.2 Corrosion control coatings intended for use in the water ballast tanks or cargo oil tanks of vessels outside of the scope of the relevant IMO Performance Standard for Protective Coatings (PSPC) resolutions will have a suitable exclusion clause prominently displayed on the recognition certificate.

9.3.3 Candidate systems which have proven incompatibility with certain environmental conditions or corrosive cargoes will have such exclusions stated on the recognition certificate.

9.4 Withdrawal of Certificate

9.4.1 Lloyd’s Register reserves the right to cancel or suspend a certificate if:

- It becomes known that pre-qualification tests have been improperly conducted, or the results of tests improperly reported
- Significant alterations to the manufacturing site quality systems have been made without notification to Lloyd’s Register, or the quality system certification has been withdrawn or allowed to expire
- The manufacturing site has relocated or different equipment is being used for coating production
- The formulation of any of the coating components has been altered
- Alterations have been made to the product technical data sheets
9.4.2 If Lloyd’s Register considers that a certificate should be withdrawn or cancelled, the manufacturer will be informed in writing and be given the opportunity to take appropriate corrective action, or give notice of appeal. It is the manufacturer’s responsibility to ensure that certificates approaching their expiry date are considered for recertification.

9.4.3 If a certificate is withdrawn, suspended or has expired, the affected coating’s entry in the ClassDirect Live list of recognised corrosion control coatings will be amended to reflect the new status.

9.4.4 A manufacturer whose certification has been cancelled or suspended may apply for recertification provided that they demonstrate that they have made the necessary remedial actions to satisfy Lloyd’s Register’s requirements.

9.5 Renewal of Certification

9.5.1 Application to renew recognition certificates is to be made at intervals not exceeding five years by the manufacturer.

9.5.2 Manufacturers wishing to renew their certificates should submit to their local Lloyd’s Register office the following documents:

- Form-CCC completed for each corrosion control coating
- The current product technical and safety data sheets for each component of the coating
- Written confirmation that all of the formulations of the components of the coating have been unchanged since the initial recognition
- Form-M completed for each manufacturing site, together with the current quality system certificate for each site

9.5.3 On receipt of the completed Form-CCC and the required supporting documents the application will be reviewed by MNDE, and any omissions or observations will be referred back to the applicant for clarification.

9.5.4 If the formulation of the coating has been significantly altered then repeat testing in accordance with section 5 above will be necessary for recertification.

9.5.5 Upon satisfactory renewal, the Lloyd’s Register recognition will be extended for a further five year period. A certificate will be issued with a new certificate number and expiry date, and the entry in the ClassDirect list of recognised corrosion control coatings will be updated accordingly.
# Lloyd’s Register Recognition of Corrosion Control Coatings

(Please complete and sign this form for each product submitted, enclosing all required documents)

1. General information of product:
   - **Product name***
   - **Trade code(s)**
   - **Colour variants**
   - **Product type (e.g. epoxy, vinyl etc.)**
   - **Company***
   - **Manufacturing plant(s) and address(es)**

2. Type of application: New application / Renewal / Add manufacturing plant (Delete as applicable)

3. Applications:
   - Water ballast tanks (non-PSPC)
   - Void spaces
   - External hulls
   - Others, please specify:

4. Use:
   - New construction
   - Maintenance
   - New construction and maintenance

5. Formulation:
   - Proprietary owner of formulation:
   - Technical transfer agreement: Yes (copy of statement enclosed): Not applicable:

6. Documents required:
   - Product Technical Data Sheet
   - Material Safety Data Sheet
   - Test report(s)
   - Service experience reports (new product only)
   - Plant production quality inspection manual/standard (new product only)

7. Manufacturer’s declarations:
   - The manufacturer will inform LR of any changes and modification of product formulation, manufacturing process, product quality control and accreditation status of quality control management system.
   - The information given above and in the attached documents is accurate and complete.

<table>
<thead>
<tr>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name (in BLOCK CAPITALS):</td>
<td>Position:</td>
</tr>
</tbody>
</table>

* The information should be consistent with details printed on product label.
Application for Lloyd’s Register Recognition of Coating Products

This form should be used in conjunction with the appropriate coating certification procedure(s) and application forms to apply for Lloyd’s Register initial or renewal recognition/approval of coatings. Please complete and sign a separate copy of this form for each manufacturer or plant of manufacture.

1. Manufacturer details:
   - Name*:
   - Address*:
   - Parent/Holding company:

2. Nominated contact:
   - Name:         Tel:         Fax:
   - Position:         Fax:
   - Email:

3. Manufacturing plant (if different from above):
   - Address:         Tel:         Fax:

4. Type of application:
   - New application / Renewal / Add manufacturing plant         (Delete as applicable)

5. Product type:
   - No. of products:     No. of products:
     - Anti-fouling paints:     Abrasion resistant ice coatings
     - Corrosion control coatings:     Maintenance coatings
     - Prefabrication primers:     PSPC-compliant coatings

6. Documents required:
   - Company profile (for new manufacturer only) □ Document enclosed □
   - ISO 9001:2000 certified □ Document enclosed □
   - Other quality control accreditation □ Document enclosed □

If the manufacturer does not hold any quality control management accreditation, an audit of the in-house quality control system by a LR surveyor or an independent inspector acceptable to Lloyd’s Register is required and an audit report should be submitted for review.

   □ Report enclosed  □ Request an inspection

7. Manufacturer’s declaration:
   - We declare that the information given in this form and in attached documents is accurate and complete.
   - For renewals, we declare that the specification and formulation have not been changed or modified since last approval/renewal.

   Signature    Date:
   Name (in BLOCK CAPITALS):    Position in company:

* The information should be consistent with details printed on product label.

Lloyd’s Register Group Limited, its subsidiaries and affiliates and their respective officers, employees or agents are, individually and collectively, referred to in this clause as ‘Lloyd’s Register’. Lloyd’s Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd’s Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract. (2013/12)